XSS-11 Micro Satellite

FACT SHEET Air Force Research Laboratory Space Vehicles Directorate 505.846.4704/4321 www.vs.afrl.af.mil

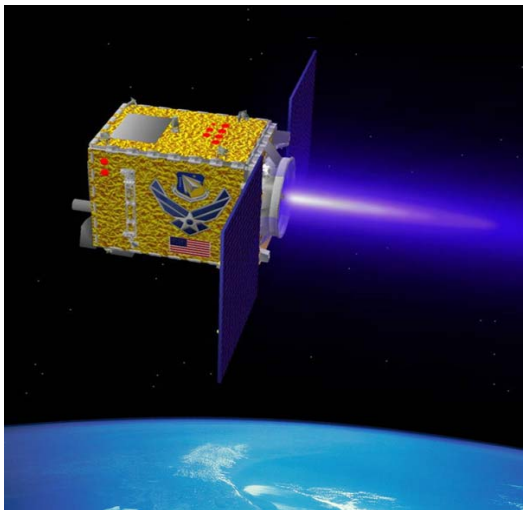
The XSS-11 micro satellite demonstrates a new class of low-cost satellites that weigh approximately 100 kilograms with the goal to explore a variety of future military applications such as space servicing, diagnostics, maintenance, space support and efficient space operations. Micro satellites such as XSS-11 offer affordable platforms to demonstrate key capabilities such as autonomous mission planning, rendezvous and proximity operations, as well as other enabling technologies. XSS-11 will be flown under the Air Force's Experimental Satellite System micro satellite demonstration program within the Air Force Research Laboratory.

Features

The XSS-11 micro satellite was launched aboard a Minotaur I rocket on April 11, 2005, two years after the XSS-10 mission. XSS-11 builds upon and advances technology demonstrated on the XSS-10 flight. AFRL's Space Vehicles Directorate employed XSS-11 to exhibit synergistic technologies and operations necessary to enable the development of space systems needed to meet Air Force Space Command's future capabilities. These technologies and operational concepts, as well as the lessons learned, will be documented and transferred to the operational community to facilitate development of future operational concepts and systems.

After successful completion of the XSS-11's checkout of the Minotaur upper stage, XSS-11 will demonstrate the ability to autonomously plan and rendezvous with other approved space objects near XSS-11's orbit. XSS-11 will only rendezvous with a pre-established list of US-owned, inactive or dead research satellites or expended rocket bodies near XSS-11's orbit. After rendezvous, XSS-11 will execute a series of maneuvers intended to demonstrate safe, controlled proximity operations around these objects.

The XSS-11 program will develop and demonstrate capabilities and technologies necessary to efficiently plan, evaluate, and safely oversee a variety of autonomously conducted rendezvous and proximity operations. The advancements demonstrated could potentially enhance Air Force Space Command's possible future mission of servicing space systems (e.g. space servicing of military space systems, damage assessment of space systems that have been disabled, space support and efficient space operations). It also may reduce the size and complexity of future space ground stations.



Background

XSS-11 is designed to extend the short duration mission of XSS-10 (15 minutes) to a mission life of at least one year. XSS-11 also improves and increases XSS-10's level of autonomy, maneuverability, and com-

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plexity of mission operations that can be planned and safely executed. The successful completion of the XSS-11 continues the evolution of a technology that promises to decrease launch costs and extend the capabilities of the uninhabited space vehicles.

Lockheed-Martin Astronautics Company of Waterton, Colo., is AFRL's structure, propulsion, and systems support contractor for XSS-11. The team also includes Broad Reach Engineering; Tempe, Ariz.; Octant Technologies, San Jose, Calif.; Draper Laboratories, Cambridge, Mass.; and SAIC, San Diego, Calif. Another key partner with AFRL for XSS-11 is the Air Force's Space Test Program managed by the Space and Missile Systems Center's Detachment 12 located at Kirtland AFB, N.M. SMC's Detachment 12 will launch XSS-11 aboard a Minotaur Launch Vehicle and provide the on-orbit command and control from their Research, Development, Test and Evaluation Support Complex also located at Kirtland AFB.